



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,983	05/16/2008	Alexander Fischer	2004P00446WOUS	8827

24737 7590 11/02/2011
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

GODBOLD, DOUGLAS

ART UNIT	PAPER NUMBER
----------	--------------

2626

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

11/02/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

vera.kublanov@philips.com
debbie.henn@philips.com
marianne.fox@philips.com

Office Action Summary	Application No. 10/597,983	Applicant(s) FISCHER ET AL.	
	Examiner DOUGLAS GODBOLD	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-7 and 14 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-7, 14 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☒ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. This Office Action is in response to correspondence filed October 14, 2011 in reference to application 10/597,983. Claims 1-7, and 14 have been amended.

Response to Amendment

2. The amendment filed October 14, 2011 has been accepted and considered in this office action. Claims 1-7 and 14 have been amended.

Response to Arguments

3. Applicant's arguments filed October 14, 2011 have been fully considered but they are not persuasive.

4. Regarding applicant's arguments, see Remarks page 1, that the 101 rejection of claim 14 should be withdrawn, the examiner respectfully disagrees. Although applicant added a "processor," the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Art Unit: 2626

5. Regarding applicant's arguments, see Remarks page 1-4, that Liu and Liljeryd fail to teach the limitations of "extending a bandwidth of the spectral characteristics by retrieving bandwidth extending information from a codebook so that the audio data sampled at the second frequency is compatible with the automatic speech recognizer operating at the first sampling frequency," the examiner respectfully disagrees. As indicated by the examiner, Liu does not teach, nor was relied upon to teach the corresponding limitations in the previous versions of the claims. Liljeryd was used to teach these limitations. Applicant argues that the bandwidth extension of Liljeryd is concerned with expanding the bandwidth of compressed signals, and therefore cannot be done "so that the audio data sampled at the second frequency is compatible with the automatic speech recognizer operating at the first sampling frequency." However, examiner notes that Liljeryd specifically notes that bandwidth extension can be performed to facilitate recognition (paragraph 0002). Furthermore, there is nothing in the current claims that prohibits the signal from being derived from a compressed audio stream. Thus Liljeryd teaches the limitations of this claim.

Claim Objections

6. Claim 14 objected to because of the following informalities: In the preamble, the claim reads "automatic speech processor" and in the body, the claim reads "automatic speech recognizer". Appropriate correction is required.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claim 14 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

9. Although **claim(s) 14** appear to fall within a statutory category (*i.e., apparatus*), claim(s) 14 encompass nothing more than logic/software modules as per the specification ("*units, modules blocks and devices described may be realized..... by implementing software modules*", Page 13 lines 14-16). Thus, claim(s) 14 are directed to non-statutory subject matter because their scope includes a computer program embodiment, an abstract data structure which does not fall within one of the four statutory categories (*i.e., it is directed to a program per se*).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2626

11. Claims 1, 4, 5, 7, 8, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (US Patent 6,199,041) in view of Liljeryd et al. (US PAP 2004/0125878)

12. Consider claim 1, Liu teaches a method for generating training data for an automatic speech recognizer for operating at a particular first sampling frequency (abstract), comprising the following steps:

deriving spectral characteristics from audio data sampled at a second frequency lower than the first sampling frequency (Col 3 line 50- col. 4. line 30, signals are converted to a log-spectra, col. 3 line 60, may be applied to up sampling case);

processing the bandwidth extended spectral characteristics to give the required training data (Col 6, line 50-65, training data transformation).

Liu does not specifically teach extending a bandwidth of the spectral characteristics by retrieving bandwidth extending information from a codebook so that the audio data sampled at the second frequency is compatible with the automatic speech recognizer operating at the first sampling frequency.

In the same field of signal resampling, Liljeryd teaches extending a bandwidth of the spectral characteristics by retrieving bandwidth extending information from a codebook so that the audio data sampled at the second frequency is compatible with the automatic speech recognizer operating at the first sampling frequency (para. 0006-0011, especially 0008, codebook used to perform extension. Para. 0002, bandwidth extension can be used to enable recognition).

Therefore it would obvious to one of ordinary skill in the art at the time of the invention to use the bandwidth extension method of Liljeryd in they system Liu in order to allow for improvements in audio quality for the training data, allowing training data to match operating conditions, leading to better recognition results; (Liljeryd 0006 and Lie Col 1 lines 12-32).

13. Consider claim 4, Liljeryd teaches a method according to claim 1, where the processing of bandwidth extended spectral characteristics comprises a step of altering the spectrum to adjust signal properties of the audio data (para. 0006-0011, spectrum is expanded).

14. Consider claim 5, Liljeryd teaches a method according to claim 4, where the step of altering the spectrum to adjust the signal properties of the audio data is performed in the linear domain (0005, prior art methods expand using linear frequency shifts).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the prior art expansion methods disclosed by Liljeryd in the system of Liu and Liljeryd in order to provide a well known method of bandwidth expansion.

15. Consider claim 7, Liu teaches a method for training an automatic speech recognition system wherein the data used for training are at least partially generated using a method according to claim 1 (Col 6, line 50-65, training data transformation).

Art Unit: 2626

16. Consider claim 14, Liu teaches a system for generating training data for an automatic speech processor operating at a particular first sampling frequency, (abstract) comprising:

A converter for deriving spectral characteristics from audio data sampled at a second frequency lower than the first sampling frequency (Col 3 line 50- col. 4. line 30, signals are converted to a log-spectra, col. 3 line 60, may be applied to up sampling case);

A processing module for processing the bandwidth extended spectral characteristics to give the required training data (Col 6, line 50-65, training data transformation).

Liu does not specifically teach a retrieval unit for retrieving bandwidth extending information for the spectral characteristics from a codebook so that the audio data sampled at the second frequency is compatible with the automatic speech recognizer operating at the first sampling frequency;

In the same field of signal resampling, Liljeryd teaches a retrieval unit for retrieving bandwidth extending information for the spectral characteristics from a codebook so that the audio data sampled at the second frequency is compatible with the automatic speech recognizer operating at the first sampling frequency; (para. 0006-0011, especially 0008, codebook used to perform extension; 0002, extended bandwidth facilitates recognition).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to use the bandwidth extension method of Liljeryd in the system Liu in order

Art Unit: 2626

to allow for improvements in audio quality for the training data, allowing training data to match operating conditions, leading to better recognition results; (Liljeryd 0006 and Lie Col 1 lines 12-32).

17. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu and Liljeryd as applied to claims 1 above, and further in view of Enbom et al. (Bandwidth Expansion of Speech Based on Vector Quantization of the Mel Frequency Cepstral Coefficients).

18. Consider claim 2, Liu and Liljeryd teach a method according to claim 1 where the conversion of audio data into sets of spectral characteristics comprises calculating the FFT of the audio data to give a set of Fourier coefficients (Liljeryd 0013, FFT algorithms can be used).

Liu and Liljeryd do not specifically teach filtering the output of the FFT with a filterbank to give a set of filterbank power values.

In the same field of bandwidth expansion, Enbom teaches filtering the output of the FFT with a filterbank to give a set of filterbank power values (systems use power spectrums as the basis for expansion, Section 2.1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use power spectrums as taught by Enbom in the system of Liu and Liljeryd in order to provide a well know way of representing the spectrum to perform bandwidth expansion (Enbom section 2.1).

19. Consider claim 3, Enbom teaches a method according to claim 2, where the conversion of audio data into sets of spectral characteristics comprises processing the FFT coefficients or the filterbank power values to give a set of log-spectral coefficients (section 2.1, use Log power spectrums).

20. Claims 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu and Liljeryd as applied to claims 1 above, and further in view of Gong et al. (US Patent 6,381,571).

21. Consider claim 6, Liu and Liljeryd teaches a method according claim 1, but does not specifically teach where the derivation of the spectral characteristics from audio data is followed by a step subtracting the mean spectrum from the spectral characteristics.

In the same field of speech recognition, Gong teaches the derivation of the spectral characteristics from audio data is followed by a step subtracting the mean spectrum from the spectral characteristics (Col. 4 lines 55-63, mean spectrum is subtracted from the observed spectrum)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the spectral subtraction of Gong in the system of Lie and Liljeryd in order to reduce inaccuracies in recognition dues to distortions, (Gong Col 1 lines 23-29).

Conclusion

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2626

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Douglas C Godbold/
Primary Examiner, Art Unit 2626